

**ABSTRACT**

By this invention, a plant  $\beta$ -ketoacyl-CoA synthase  
condensing enzyme is provided free from intact cells of  
5 said plant and capable of catalyzing the production of very  
long chain fatty acid molecules. Also contemplated are  
constructs comprising the nucleic acid sequence and a  
heterologous DNA sequence not naturally associated with the  
condensing enzyme encoding sequences, and which provide for  
10 at least transcription of a plant condensing enzyme  
encoding sequence in a host cell. In this fashion very  
long chain fatty acid molecules may be produced in a plant  
cell. Included are methods of modifying the composition of  
very long chain fatty acid molecules in a plant cell.